

Important Advances in Clinical Medicine

Epitomes of Progress — Preventive Medicine and Public Health

The Scientific Board of the California Medical Association presents the following inventory of items of progress in preventive medicine and public health. Each item, in the judgment of a panel of knowledgeable physicians, has recently become reasonably firmly established, both as to scientific fact and important clinical significance. The items are presented in simple epitome and an authoritative reference, both to the item itself and to the subject as a whole, is generally given for those who may be unfamiliar with a particular item. The purpose is to assist the busy practitioner, student, research worker or scholar to stay abreast of these items of progress in preventive medicine and public health which have recently achieved a substantial degree of authoritative acceptance, whether in his own field of special interest or another.

The items of progress listed below were selected by the Advisory Panel to the Section on Preventive Medicine and Public Health of the California Medical Association and the summaries were prepared under its direction.

Reprint requests to: Division of Scientific and Educational Activities,
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Vinyl Chloride-Related Cancer

VINYL CHLORIDE MONOMER is a widely used chemical. It is the parent compound of polyvinyl chloride (PVC), a plastic resin used in innumerable consumer and industrial products, including containers, wrapping film, electric insulation, pipelines, credit cards and many other items. Notwithstanding its many valuable properties, overwhelming scientific evidence now shows vinyl chloride to be carcinogenic to humans. Moreover, medical evidence suggests a strong association between exposure to vinyl chloride and the occurrence of a number of toxic, nonmalignant illnesses involving skin, bones, liver, lungs and blood. Polyvinyl chloride (PVC) and other vinyl chloride polymers are not, at the time of this writing, considered to represent a carcinogenic risk to man.

First produced commercially in the United States in 1927, vinyl chloride gas was for many years regarded by toxicologists as having only moderate liver toxicity. It was once considered for use as a general anesthetic, but its use for this purpose was abandoned in the early 1930's after experiments in animals showed that its anesthetic effects were often accompanied by cardiac irregularities.

Major nonmalignant effects clearly associated

with occupational exposure to the gas include acute intoxication; disturbances of liver function; acroosteolysis, often with Raynaud phenomenon and scleroderma, and alterations in pulmonary function, with or without abnormal findings on x-ray studies of the chest. Other effects, such as alterations in the cellular elements of the blood, have been reported by some authors in persons who work with vinyl chloride, but confirmation by other authors has not been uniform.

There is some evidence that in workers exposed to vinyl chloride there may be an increased frequency of chromosomal aberrations. It has been alleged that in wives of men who work with vinyl chloride there may be a greater than usual fetal death rate and that mothers living in communities near PVC production facilities may be at an increased risk of giving birth to children with birth defects. It must be emphasized that, at the time of this writing, a causal relationship between vinyl chloride exposure and these latter phenomena—excess fetal death rate and birth defects—is not only unproven but is the subject of serious scientific dispute.

In January 1974 Creech and Johnson reported three cases of angiosarcoma of the liver in workers employed in a polyvinyl chloride polymerization plant in Louisville, Kentucky. Angiosarcoma